Early Journal Content on JSTOR, Free to Anyone in the World

This article is one of nearly 500,000 scholarly works digitized and made freely available to everyone in the world by JSTOR.

Known as the Early Journal Content, this set of works include research articles, news, letters, and other writings published in more than 200 of the oldest leading academic journals. The works date from the mid-seventeenth to the early twentieth centuries.

We encourage people to read and share the Early Journal Content openly and to tell others that this resource exists. People may post this content online or redistribute in any way for non-commercial purposes.

Read more about Early Journal Content at http://about.jstor.org/participate-jstor/individuals/early-journal-content.

JSTOR is a digital library of academic journals, books, and primary source objects. JSTOR helps people discover, use, and build upon a wide range of content through a powerful research and teaching platform, and preserves this content for future generations. JSTOR is part of ITHAKA, a not-for-profit organization that also includes Ithaka S+R and Portico. For more information about JSTOR, please contact support@jstor.org.

A KEY TO THE SPECIES AND PRINCIPAL VARIETIES OF CLADONIA OCCURRING IN NEW ENGLAND.

LINCOLN WARE RIDDLE.

One of the most urgent needs in the study of lichens at the present time is a set of keys to the larger genera. So far as I am aware no key to the New England species of Cladonia has ever been published. It is to contribute toward filling this need that the following key is here offered. It is based on the study of an extensive series of specimens, and has been tested by several students, both inexperienced and experienced. Yet, in a genus where the species are as variable as in Cladonia and where such puzzling transitional forms occur, it is not to be expected that any key can be constructed that will serve for the determination of all specimens. It is hoped, however, that with material which is fairly typical, satisfactory results may be obtained. For the authors and synonymy of the species given. reference may be made to the alphabetical list at the end of the key.

Sect. I. Primary thallus presistent and crustaceous. Podetia short (mostly under 1 cm.), club-shaped, simple or branched, apothecia pale brown, poorly developed.. *C. papillaria.*

Sect. II. Primary thallus squamulose when present, often disappearing.

Sub Sect. 1. Squamules when present medium-sized to small, whitish on under side. (For Sub-Sect. 2, see end of key).

Series 1. Apothecia red. (Rarely the species of this series may have pale yellowish-brown apothecia, a condition known as var. *ochrocarpia*).

A. Podetia cylindrical, without cups.

B. Green to yellow, smooth to warty, never sorediate.

C. Simple below, sparingly branched above.

D. Podetia reduced, squamules of thallus sorediate *C. cristatella* v. *paludicola.*

DD. Podetia well developed, thallus not sorediate.

E. Podetia with few squamules or none....... *C. cristatella.*

EE. Podetia densely squamulose..... *C. cristatella* v. *vestita.*

CC. Podetia branched throughout........ *C. cristatella* v. *ramosa.*

BB. Grayish, powdery-sorediate.

C. Thallus scanty, podetia rarely squamulose.

D. Podetia stout, sparingly branched, KOH+.... *C. macilenta.*

DD. Podetia slender, simple, KOH—.......... .. *C. bacillaris.*

CC. Thallus well-developed, podetia short, squamulose, decorticate between the squamules.......................... *C. didyma.*

AA. Podetia cup-bearing.

B. Podetia medium-sized (mostly 2 cm. or less).

C. Podetia white-powdery-sorediate, cup with incurved margins, commonly proliferating.......................... *C. digitata.*

CC. Podetia warty or granulate-sorediate, cups dilated, rarely proliferating.................................... *C. coccifera.*

BB. Podetia elongated (mostly 4 cm. or over), yellowish.

C. Podetia sulphur-powdery, never squamulose..... *C. deformis.*

CC. Podetia smooth and densely squamulose. ..... *C. bellidiflora.*

Series 2. Apothecia brown.

A. Podetia cylindrical, without cups.

B. Podetia simple or nearly so, primary thallus usually persistent.

C. Podetia absent or thickly squamulose.

D. Podetia absent or nearly so, squamules coarse. *C. caespiticia.*

DD. Podetia evidently present, squamules fine, often sorediate.

E. Podetia short (1 cm. or less).................. *C. delicata.*

EE. Podetia taller (2 cm. or more).............. *C. decorticata.*

CC. Podetia present and with few squamules or none.

D. Corticate, without soredia or granules.

E. Cortex continuous or nearly so.

F. Podetia short (mostly less than 2 cm.).

G. Squamules fine, podetia slender in proportion to the apothecia .... *C. mitrula.*

GG. Squamules coarse, podetia stouter.

H. Typically simple, KOH+ (red) ...... *C. subcariosa.*

HH. Branched above, KOH—.... *C. cariosa* v. *corticata.*

FF. Podetia elongated (over 3 cm.).

G. Slender, little inflated....... *C. gracilis* v. *chordalis.*

GG. Stout, much inflated......... *C. gracilis* v. *elongata.*

EE. Cortex fissured, irregular and uneven........ *C cariosa.*

DD. More or less decorticate, sorediate, or granulate.

E. Scurfy-granulate .... *C. pityrea.*

EE. Powdery-sorediate.

F. Podetia perforate, gray................... C. *glauca.*

FF. Podetia not perforate.

G. Podetia whitish throughout.

H. Simple, 2 cm. high or less.. *C. fimbriata* v. *coniocrea.*

HH. Sparingly branched, 3 cm. high or more. *C. fimbriata* v. *subulata.*

GG. Podetia brown below..... .... *C. cornuta.*

BB. Podetia repeatedly branched and forming more or less intricate masses, thallus mostly disappearing.

C. Podetia corticate, smooth, squamules when present coarse.

D. Yellowish-green, tips fastigiate, blunt.......... *C. uncialis.*

DD. Grayish or brownish-green, tips dichotomous, acute.

E. Cortex continuous, without soredia.

F. With few squamules or none.

G. Podetia more or less erect, in loose masses.

H. Podetia wholly gray........ .... *C. furcata.*

HH. Brown, especially above... *C. furcata* v. *palamaea.*

GG. Podetia intricately intertangled in dense masses. *C. rangiformis.*

FF. More or less covered with coarse squamules. *C. furcata* v. *pinnata.*

EE. Cortex broken in places, and sorediate especially above. *C. furcata* v. *scabriuscula*

CC. Podetia decorticate, squamules when present fine.

D. Podetia without squamules.

E. Ultimate branches recurved, tips blunt... *C. rangiferina.*

EE. Ultimate branches more erect, tips acute.

F. Loosely branched, in irregular masses..... *C. sylvatica.*

FF. Intricately branched, in dense rounded tufts. *C. alpestris.*

DD. Podetia covered with fine squamules. *C. squamosa* v. *muricella.*

AA. Podetia cup-bearing, often proliferating (i. e. branching from the margins of the cup).

B. Cups perforate.

C. Without soredia.

D. With scattered coarse squamules or none.

E. Podetia smooth.

F. Slightly inflated, cups narrow........... *C. crispata.*

FF. Much inflated, cups spreading, often becoming leafy. *C. turgida.*

EE. Podetia pitted..................... .....*C. reticulata.*
DD. Covered with fine squamules...............*C. squamosa.*
CC. Gray powdery-sorediate........................*C. cenotea.*
BB. Cups never perforate.
C. Corticate and smooth.
D. Gray or brownish green.
E. Proliferations from margins of cups.
F. Cups regular, squamules few or none ... ..*C. gracilis.*
(*C. gracilis* v. *chordalis* and *elongata* may also be sought here).
FF. Cups irregular, podetia squamulose.
C. gracilis v. *dilatata.*
EE. Proliferations from center of cup..........*C. verticillata.*
DD. Yellowish-green ....*C. amaurocrea.*
CC. Podetia warty or decorticate.
D. Powdery-sorediate.
E. Cups regular and simple . ...*C. fimbriata.*
EE. Cups irregular and proliferous...*C. fimbriata* v. *radiata.*
DD. Not powdery-sorediate.
E. Areolate-warty, cups ample.
F. Simple or nearly so.......................*C. pyxidata.*
FF. Luxuriantly proliferous.................*C. degenerans.*
EE. Scurfy-granulate, cups reduced...............*C. pityrea.*
Sub-Sect. 2. Squamules always present, strikingly large, creamy-yellow on underside.................*C. foliacea* v. *alcicornis.*

Alphabetical list of the species and varieties with the authors and with synonyms used in Tuckerman's "Synopsis of North American Lichens."

Cladonia alpestris (L.) Rabenh. (*Cl. rangiferina* var. *alpestris* (L.) Schaer.)
" *amaurocrea* (Flke.) Schaer.
" *bacillaris* Nyl. (*Cl. macilenta* (Ehrh.) Hoffm. in part.)
" *bellidiflora* (Ach.) Schaer.
" *caespiticia* (Pers.) Flke.
" *cariosa* (Ach.) Spreng.
" " var. *corticata* Wainio. (*Cl. symphycarpa* in part, of American authors, not Fries.)
" *cenotea* (Ach.) Schaer.
" *coccifera* (L.) Willd. (*Cl. cornucopioides* (L.) Fr.)
" " var. *ochrocarpia* Flke.
" " " *pleurota* (Flke.) Schaer.

Cladonia cornuta (L.) Schaer.
" *crispata* (Ach.) Flot. (*Cl. furcata* var. *crispata* Flke.)
" *cristatella* Tuck.
" " var. *ochrocarpia* Tuck.
" " " *paludicola* Tuck.
" " " *ramosa* Tuck.
" " " *vestita* Tuck.
" *decorticata* (Flke.) Spreng.
" *deformis* Hoffm.
" *degenerans* (Flke.) Spreng.
" *delicata* (Ehrh.) Flke.
" *didyma* (Flke.) Wainio. (*Cl. pulchella* Schwein.)
" *digitata* Schaer.
" *fimbriata* (L.) Fr. (*Cl. fimbriata* var. *tubaeformis* Fr.)
" " var. *coniocrea* (Flke.) Wainio.
" " " *radiata* (Schrad.) Coem.
" " " *subulata* (L.) Wainio.
" *foliacea* " *alcicornis* (Lightf.) Schaer. (*Cl. alcicornis* (Lightf.) Flke.)
" *furcata* (Huds.) Schrad.) (*Cl. furcata* var. *racemosa* of Tuck., in part.)
" " var. *palamaea* (Ach.) Nyl. (*furcata* var. *subulata* Flke.)
" " " *pinnata* (Flke.) Wainio. (*Cl. furcata* var. *racemosa* of Tuck., in part,)
" " " *scabriuscula* (Del.) Coem. (Not recognized by uckerman.)
" *glauca* Flke. (*Cl. cenotea* var. *furcellata* Fr.)
" *gracilis* (L.) Willd. (*Cl. gracilis* var. *hybrida* of Tuckerman in part.)
" " var. *chordalis* (Flke.) Schaer. (var. *elongata* f. *chordalis* Fr.)
' " " *dilacerata* Flke. (var. *hybrida* of Tuckerman in part.)
" " " *elongata* (Jacq.) Flke. (var. *elongata* f. *macroceras* Fr.)
" *macilenta* (Ehrh.) Hoffm.
" *mitrula* Tuck.
" *papillaria* (Ehrh.) Hoffm.
" *pityrea* (Flke.) Fr. (*Cl. fimbriata* var. *adspersa* Tuck., in part.)
" *pyxidata* (L.) Fr.
" *rangiferina* (L.) Web.
" *rangiformis* Hoffm. (*Cl furcata* var. *pungens* Fr.)
" *reticulata* (Russell) Wainio. (*Cl. Boryi* Tuck.)

Cladonia squamosa (Scop.) Hoffm.

" " var. *muricella* (Del.) Wainio. (*Cl. squamosa* f. *attenuata* Fr.)

" *subcariosa* Nyl. (*Cl. gracilis* var. *verticillata* f. *symphycarpia* Tuck., *Cl. symphycarpa*, in part, of American authors, not Fries.)

" *sylvatica* Hoffm. (*Cl. rangiferina* var. *sylvatica* (L.) Schaer.)

" *turgida* (Ehrh.) Hoffm.

" *uncialis* (L.) Web.

" *verticellata* Hoffm. (*Cl. gracilis* var. *verticellata* Fr.)

Reprinted by permission from Rhodora for November, 1909. Although intended primarily for New England, the key will serve almost equally well for any part of the north-eastern United States.

Wellesley, Mass.

"THE LICHENS OF MINNESOTA."

A Review.

LINCOLN W. RIDDLE.

In 1896 appeared in the Minnesota Botanical Studies the first of Professor Bruce Fink's now well-known series of papers setting forth the ecological and distributional data resulting from an extensive field study of the lichens of Minnesota. The seven years that have elapsed since the last number of this series have been devoted to a critical study of the material in the herbarium and library. We now have the final systematic results of this study published under the title "The Lichens of Minnesota" as one of the contributions from the U. S. National Herbarium (Vol. 14, part 1, pp. 1–269, with 51 plates, and 18 text-figures. Published by the Smithsonian Institution, Washington, D. C. June 1, 1910).

Professor Fink states that the book is intended not only for specialists but also for younger students. Accordingly, the first 33 pages are devoted to a general account of the morphology, reproduction, and economic role of lichens, the têxt being illustrated with figures taken from various authorities. We then come to the descriptive catalogue of Minnesota lichens, with an outline of the classification adopted by the author, a key to the genera, and a systematic account of the species and subspecies of each genus, with keys, detailed descriptions, habitat notes, and geographical range. This catalogue includes 439 species and subspecies. A glossary and index close the book.

Several factors make this work the most notable publication in North American Lichenology since the appearance of Tuckerman's Synopsis. The first factor is the long experience of the author in the study of lichens in general, covering a period of twenty-five years, during which he has had the